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An examination of the association between seeing smoking in films and tobacco use in young adults in the west of Scotland: cross-sectional study

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Abstract

The objective is to examine the association between the amount of smoking seen in films and current smoking in young adults living in the west of Scotland in the UK. Cross-sectional analyses (using multivariable logistic regression) of data collected at age 19 (2002–04) from a longitudinal cohort originally surveyed at age 11 (1994–95) were conducted. The main outcome measure is smoking at age 19. No association was found between the number of occurrences of smoking estimated to have been seen in films (film smoking exposure) and current (or ever) smoking in young adults. This lack of association was unaffected by adjustment for predictors of smoking, including education, risk-taking orientation and smoking among peers. There was no association between film smoking exposure and smoking behaviour for any covariate-defined subgroup. Associations have been found between film smoking exposure and smoking initiation in younger adolescents in the United States. In this study, conducted in Scotland, no similar association was seen, suggesting that there may be age or cultural limitations on the effects of film smoking exposure on smoking. The lack of association could be due to methodological issues or greater sophistication of older adolescents and young adults in interpreting media images or the greater ubiquity of real-life smoking instances in Scotland. If the latter, film smoking exposure could become a more important risk factor for smoking uptake and maintenants in older adolescents following the recent ban on smoking in public places in Scotland.

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Introduction

Despite the long-established health risks of tobacco consumption, smoking continues to be commonly portrayed in films [1]. One study reports an average of 21.5 tobacco incidents per film among the top 50 commercially successful films between 1991 and 2001 [2], although other estimates are more conservative [3]. Although there was a decline in portrayals of tobacco use in films during the 1980s, smoking in films was as common in 2002 as it was in 1950 [4] despite a marked fall in the prevalence of smoking in the United States and the UK over the same period. Cigarette brand appearances are also common [5], although it has been reported that there are varying perspectives within Hollywood on rates of tobacco use in films, the necessity of portraying tobacco use, and Hollywood's 'degree of responsibility for societal smoking' (p. 384) [6]. As it has been estimated that the typical adolescent in the United States spends 2–3 h per day watching television and films [7], media portrayals of smoking may be influential in shaping young people's views of smoking. Portrayals of smokers in films have

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been said to ignore the negative consequences and correlates of smoking [8], exaggerating the levels of smoking by up to four times in some groups, and smokers are typically depicted as more romantic and sexually active (and marginally more intelligent) than non-smokers [9]. Such depictions are likely to be particularly appealing to young adolescents as they begin to experiment with adult risk behaviours. Glantz *et al*. [4] recently concluded that 'with the long shelf life that movies gain through television rebroadcast, videotape, and DVD, the pro-tobacco influence of the high smoking levels in recent movies will continue to be a pro-tobacco influence on teenagers for years to come unless remedial action is taken' (p. 262).

In the USA, exposure to smoking in films has been shown to be associated with smoking initiation in young adolescents (aged between 9 and 15 years) both cross-sectionally [7, 10] and prospectively [11, 12]. For example, in a prospective study of school pupils in New England, USA, those in the highest quartile of film exposure were >2.5 times more likely to have initiated smoking 13–26 months later compared with the lowest quartile, and it was estimated that >50% of smoking initiation could be attributed to smoking in films. The effect of seeing smoking incidents in films was also stronger in adolescents with non-smoking parents [7, 11]. Researchers have called for these results to be confirmed in other countries [11]. Here we investigate the association between exposure to smoking in films and tobacco consumption in very young adults (age 19) living in the west of Scotland in the UK.

Methods

Sample

Data are from the *West of Scotland 11 to 16/16+ Study*, a longitudinal study of health and lifestyles following a single-year cohort, resident in and around Glasgow, UK [13]. Respondents were recruited in 1994–95 during their final year of primary schooling (age 11, $n = 2586$ attending 135 primary schools, 93% of the issued sample). They were re-surveyed in the 43 secondary schools that they went on to attend at ages 13 ($n = 2371$) and 15 ($n = 2196$), and, in 2002–04, after school leaving, at age 19 ($n = 1258$, representing 49% of the baseline and 45% of the original issued samples). At 11, parental questionnaires, focusing on the child's early life and social circumstances, were completed and returned via the school for 86% of the sample. The *11 to 16/16+ Study* received approval from the University of Glasgow Ethics Committee for Non-clinical Research Involving Human Subjects, and, in addition, the school-based stages were approved by participating education authorities and schools.

The baseline sample (age 11 years) was representative of the population in respect of sex and socio-economic status (SES) [14]. Probabilistic weights have been derived to compensate for differential attrition at each follow-up (e.g. attrition was higher among those from lower SES groups, persistent school truants, early school leavers and smokers). Since smoking was one of the characteristics associated with attrition, we report results based on weighted data at age 19 ($n = 1006$, because only those who had completed all previous waves were assigned a weight).

Procedure

Each school-based survey (at ages 11, 13 and 15) included health and lifestyle-related self-completion questionnaires administered in exam-type conditions. Nurses helped with questionnaire completion where necessary, conducted short interviews and undertook physical measurements. At age 19, respondents were interviewed by nurse interviewers, using computer-aided personal interviews, and completed questionnaires in a range of venues (a survey centre at Glasgow University, their old schools and their homes). The nurses were employed and trained by the research team.

Measures

Exposure to smoking in films

To estimate the amount of smoking that the respondents had seen in films ('film smoking exposure'), we used a measure developed by Sargent and colleagues in the United States which has been

described elsewhere [7, 10, 11]. We aimed to replicate their method as closely as possible. At age 19, respondents received a self-completion questionnaire which included a list of 50 films randomly selected from a sample of 601 popular contemporary films released between 1988 and 1999, and they were asked to indicate whether or not they had seen each of the 50 films on their list. The number of occasions on which each film was seen was not recorded. The 601 films included the 25 box office hits in the United States every year from 1988 to 1995 (n = 200); the top 100 box office hits for the years 1996, 1997 and 1998 (n = 300); the top 50 box office hits from the first half of 1999 and 51 additional films selected because they featured stars popular among adolescents [11]. Trained coders counted the number of occurrences of smoking in each film (see 11). The total exposure for each respondent was the sum of the number of occurrences in each film seen. The 13 cases above the 99th percentile of the distribution for the film smoking exposure variable were excluded. Film smoking exposure was then classified into quartiles with the following cut-offs: 1–139 occurrences for the lowest quartile, 140–201 for the second quartile, 202–286 for the third quartile and 287–568 for the highest quartile.

Smoking

Using the standard measure of smoking among young people (UK OPCS; 15), respondents were asked to indicate their smoking status ('I have never smoked'; 'tried once (even if just a puff)', 'used to smoke but gave up (ex-smoker)'; 'occasional social smoker' and 'regular smoker'). The outcome measure was dichotomized into current (regular or occasional) smokers versus never and ex-smokers at age 19. Additional analyses were also run comparing ever smokers with never smokers.

Parental social class

Occupational data from parents at age 11 were used to derive a head of household classification (based on the father's occupation or his previous one if not currently working or, if no father, the mother's current or previous occupation) according to the UK Registrar General's Classification of Occupations [16]. Where no parental data were available, information on current (but not previous) parental occupation as provided by the young people during interviews with the nurses (at age 11) was utilized instead. The reliability of these data is high [17]. For analytic purposes, the social class data were collapsed into four categories: all non-manual occupations (class I, II and IIINM), skilled manual (class IIIM), semi-skilled and unskilled manual (class IV and V) and missing.

Parental smoking

Parental smoking during the young person's adolescence (dichotomized as any versus no parental smokers) was based on questions on parental smoking at age 15. This question was asked in relation to resident parental figures.

Attitudes to risk and rule breaking

At age 15, respondents were asked to describe themselves across several dimensions (with response categories 'very true', 'true', 'untrue' and 'very untrue'). This included items on attitudes towards risk (I take risks) and rule breaking (I am a rule breaker). Since these items were not included at age 19, analyses adjusting for these self-descriptors utilize data obtained at age 15.

Qualifications by age 19

At 19, respondents were asked how many 'highers' they had obtained at school. These are Scottish qualifications, generally taken at age 16–17 (1 year after statutory school leaving), required for entry into higher education. Here we have dichotomized them into those with any versus none.

Peer smoking

At 19, respondents were asked how many of their friends smoked. Their responses were dichotomised in these analyses as half or more versus fewer than half or none.

Analysis

All analyses excluded those above the 99th percentile of the distribution for the film smoking exposure

variable (reduced weighted $n = 992$). Basic descriptive statistics of the film variables (film smoking exposure and number of films seen) were obtained along with frequencies of the control variables. Initially, chi-squared tests were used to compare differences in proportions of smokers at each quartile of exposure, at age 19.

A series of logistic regression models was run with smoking status at age 19 (current/none and ever/never) as the outcomes. Multivariate models were built sequentially: first the relationship with film smoking exposure by age 19, categorized by quartiles of exposure, was assessed; second, the model was adjusted for gender and background variables (parental occupational social class and parental smoking); thirdly, additional adjustment was made for individual characteristics (whether sees oneself as a risk taker and rule breaker, educational qualifications, i.e. achievement of highers by age 19) and finally, additional adjustment was made for peer smoking. At each age, all models include only those respondents with no missing data on any variable (apart from parental social class) included in the final adjusted model (final weighted $n = 948$). As noted above, here we present the weighted data. However, although the basic characteristics of the unweighted sample were rather different (lower rates of own, parental and peer smoking, higher proportions from non-manual class backgrounds and with higher qualifications), the results of the multivariate models were very similar when run with unweighted data.

Table I. *Descriptive data: frequency of smoking and for control variables*

Variable	%
Smoking (age 19)	
Current	
Regular	27.9
Occasional	5.4
Ex	
Tried once	22.0
Ex-smoker	7.9
Never smoker	36.9
Gender	
Male	49.6
Female	50.4
Parental social class (age 11)	
Non-manual	42.1
Skilled manual	30.2
Semi-skilled/unskilled manual	22.3
Missing	5.4
Parental smoking (age 15)	
None	49.1
Any	50.9
'I take risks' (age 15)	
Very untrue	5.1
Untrue	30.4
True	53.8
Very true	10.6
'I break rules' (age 15)	
Very untrue	24.8
Untrue	48.6
True	22.2
Very true	4.4
Higher qualifications (age 19)	
Yes	57.7
No	42.3
Peers' smoking status (age 19)	
None/some	65.8
Half or more	34.2

Results

Basic descriptive characteristics of the sample ($n = 948$) are shown in Table I. A third of the sample (33.2%) were current smokers (27.9% regular and 5.4% occasional or social), a third (36.9%) had never smoked, 22.0% said that they had tried smoking once and 7.9% were ex-smokers. Half (50.9%) had at least one parent who smoked (when they were aged 15), and a third (34.2%) said that half or more of their friends currently smoked. Over half (57.7%) had obtained at least one higher. At age 15, only a minority had described themselves as a rule breaker (26.6% true or very true), but a majority described themselves as a risk taker (64.4% true or very true). On average, respondents had seen 18.8 out of the 50 films presented to them. The percentage of current smokers was 30.4% in the lowest quartile, 36.1% in the second, 36.0% in the third and 30.4% in the highest quartile of film smoking exposure.

Table II shows results for the logistic regression models. There is little evidence for any association with film smoking exposure and smoking at age

Table II. *Smoking status at age 19 by exposure to smoking in films, before and after adjustment for gender, background and individual variables, and peer smoking (odds ratios, significance levels and confidence intervals)*

Independent variables (n = 948)	Model 1. Film smoking exposure (unadjusted)	Model 2 (1+adjusted for background variables)	Model 3 (2+adjusted for individual variables)	Model 4 (3+adjusted for peer smoking)
Quartiles of exposure to smoking in films				
Lowest	1.00	1.00	1.00	1.00
Second	1.29 (0.88, 1.90)	1.31 (0.88, 1.93)	1.40 (0.92, 2.13)	1.46 (0.93, 2.28)
Third	1.29 (0.88, 1.89)	1.35 (0.91, 2.00)	1.40 (0.91, 2.16)	1.34 (0.84, 2.12)
Highest	1.00 (0.68, 1.48)	0.95 (0.63, 1.43)	0.99 (0.63, 1.55)	0.92 (0.57, 1.48)
Background variables				
Gender				
Male		1.00	1.00	1.00
Female		0.87 (0.65, 1.17)	1.28 (0.92, 1.77)	1.36* (0.97, 1.93)
Parental social class				
Non-manual		1.00	1.00	1.00
Skilled manual		1.46 (1.04, 2.05)**	0.97 (0.66, 1.42)	1.13 (0.75, 1.69)
Semi/unskilled		1.95 (1.35, 2.81)****	1.22 (0.81, 1.85)	1.32 (0.85, 2.06)
Missing		0.67 (0.33, 1.35)	0.39 (0.18, 0.82)**	0.46 (0.21, 1.02)*
Parental smoking				
None		1.00	1.00	1.00
Any		1.83 (1.37, 2.44)****	1.22 (0.88, 1.69)	0.94 (0.66, 1.34)
Individual				
'I take risks'				
Very untrue			1.00	1.00
Untrue			0.96 (0.44, 2.12)	0.91 (0.40, 2.04)
True			1.80 (0.83, 3.89)	1.44 (0.66, 3.17)
Very true			1.26 (0.53, 3.01)	0.98 (0.40, 2.38)
'I break rules'				
Very untrue			1.00	1.00
Untrue			1.03 (0.68, 1.55)	0.99 (0.64, 1.53)
True			2.18 (1.35, 3.53)***	1.85 (1.11, 3.08)**
Very true			4.34 (1.93, 9.77)****	4.12 (1.75, 9.70)***
Highers by age 19				
No			1.00	1.00
Yes			0.28 (0.20, 0.40)****	0.33 (0.23, 0.47)****
Peers' smoking status				
None				1.00
Any				4.97 (3.57, 6.93)****

*$P < 0.1$, **$P < 0.05$, ***$P < 0.01$, ****$P < 0.001$.

19 in the unadjusted model (Table II, model 1) or in those adjusting for gender and background variables (parental smoking, parental social class, model 2) or additionally for individual variables [seeing oneself as a risk taker or rule breaker, educational achievement (having any highers by age 19), model 3] and peer smoking (model 4). Although there was a modest but non-significant elevation in risk in the second quartile of exposure, there was no linear relationship between film smoking exposure and smoking, and the odds ratio in the highest exposure group did not differ from that in the lowest exposure group in any of the models. Being a rule breaker, having no highers, having friends who smoked and to a lesser extent, after accounting for individual characteristics and peer smoking, being female were all associated with a higher risk of smoking at age 19. Interactions between gender and film smoking exposure were examined but were not significant.

We reran the analyses comparing ever smokers with never smokers as it is plausible that young people who started to smoke after seeing images of smoking in films may have subsequently quit. However, the results were very similar and again there was no evidence of an association. Unadjusted odds ratios (95% confidence intervals) of being an 'ever smoker' compared with a never smoker were 1.34 (0.92–1.96), 1.14 (0.79–1.65) and 0.86 (0.60–1.24) for the second, third and fourth quartiles of film smoking exposure, respectively; equivalent figures adjusted for background, individual variables and peer smoking were 1.43 (0.95–2.14), 1.21 (0.80–1.81) and 0.90 (0.60–1.35), respectively.

Discussion

The mass media, including TV and films [1], have been used both by the tobacco industry to promote smoking [18] and as a vehicle for the promotion of smoking cessation (see, e.g. 19, 20). In the United States, exposure to smoking in films has been shown to be associated with smoking initiation in young adolescents both cross-sectionally [7, 10] and prospectively [11, 12]. As Charlesworth and Glantz note:

> Movies teach children the same smoking stereotypes (glamour, coolness, attractiveness, sexiness, rebelliousness) and adult motivations (stress relief, celebration, romance) for smoking that pervade tobacco advertising and help establish the perception that smoking is normal, prevalent, and even desirable in society, especially among adults [1] (p. 1526).

These US findings prompted us to question whether a similar association would be observed in the UK. Rather than conducting a strict replication of earlier US research, we capitalized on an ongoing longitudinal study in which a cohort of young people had been well characterized at ages 11, 13 and 15, including their social background and circumstances, their smoking behaviour and individual characteristics and traits such as education and risk-taking orientation. Hence, our study differs somewhat from previous research in this area as we primarily examine the relationship between film exposure to smoking and current smoking in early adulthood, while the earlier US studies have focussed on the association between film exposure and adolescent experimentation. When our cohort members were re-interviewed at age 19, we included a measure of film smoking exposure to examine whether this was related to current smoking; it is unfortunate that we were not able to include this measure at baseline. Contrary to our expectations, no association was seen in these young adults in the west of Scotland between film exposure and either current or ever smoking. This is despite using similar exposure measurement methodology to the US studies. A number of factors, relating to our respondents' age, their cultural milieu and methodological considerations, may account for this difference from the US findings. These are considered in turn.

Smoking uptake is a process that begins during late childhood or early adolescence and increases in frequency and intensity in some young people thereafter. It is plausible that by the age of 19, many other influences (including one's own direct experiences of smoking and level of addiction to nicotine and observations of peers' smoking behaviour) have had such a strong main effect on their current smoking behaviour that the impact of exposure to smoking in films is 'swamped'. Qualitative research has suggested that women in their mid to late twenties perceived the social context of smoking to be the predominant influence on smoking in early adulthood from the time that they left their parental home until they settled into a 'committed' relationship [21]. In our study, peer smoking was very strongly associated with current smoking and parental smoking was not (in models adjusted for individual factors and peer smoking). It could be that for current smoking in this young adult sample, the main effects of the peer social environment and addiction to nicotine overwhelm the effect of other factors (film smoking exposure and parental smoking) typically found to predict smoking 'initiation' in young adolescents. If this 'swamping' effect explains

the lack of association, it suggests an attenuation of the effects of film smoking might also apply to older adolescents or young adults in the United States.

Another way in which age may be relevant to film viewing is that older adolescents and young adults may have an increased sophistication and more critical reading and interpretation of media images (including of smoking) which makes them resistant to their effects. Qualitative research on young people's interpretations of smoking in films has shown that older teenagers (age 16 and 17) in New Zealand appear to interpret these images differently to their younger peers (age 12 and 13) [22–24]. Although both groups expressed a degree of nonchalance about smoking in films and seeing depictions of smoking led to unrealistically high presumptions about the prevalence of smoking in society, the older teenagers were more critical and rejected smoking images that did not seem realistic in their own experience of smoking. This interpretation implies that programmes to delay exposure to film smoking (through better restrictions aimed at young adolescents) or media literacy programmes might have a protective effect on smoking uptake during early adolescence. As Batchelor *et al*. [25] have noted, media literacy work could 'enable young people to look beyond the face value of [a] message and be more critical of what is *not* as well as what *is* being said' (p. 675).

A second explanation may lie in three aspects of cultural differences between the United States and UK. The first of these is the prominence of tobacco smoking in society. The prevalence of smoking in Scotland is higher than in the United States (where smoking prevalence was 21% in 2004). Among adults aged 16 and over in Scotland, 29% of men and 28% of women are current smokers, with 38% of male smokers and 33% of female smokers consuming >20 cigarettes per day. Smoking rates in Scotland are at their highest among people who are in early midlife (i.e. likely to be of a similar age to our respondents' parents): 39% of men and 35% of women aged 25–34, and 34% of men and 33% of women aged 35–44, are smokers [26]. In our own sample, half of the respondents were living in a home where at least one parent or parent figure was a smoker when they were aged 15. It may be that if young people are surrounded by smoking in their social environment, they are more impervious to film images of smoking. This is consistent with the US finding that the effect of exposure to smoking in films was stronger for adolescents whose parents were non-smokers [7, 11]. This interpretation implies that film smoking may become a more important risk factor as smoking declines in public (and perhaps also in private) following the ban on smoking in public places in Scotland in 2006.

The second aspect related to cultural differences is that of viewing patterns and use of leisure time. It may be that other fictional or real-life visual portrayals of smoking are more often seen in the Scottish context and are therefore more salient than portrayals of smoking in Hollywood films. On average, our respondents watched 3.1 h of television on a weekday and 2.8 h on a weekend day. In the week prior to the survey, 77% reported watching a 'soap opera' on 1 day or more and 33% on 5 days or more, and their favourite TV programmes were Eastenders (a British soap), Simpsons (a popular cartoon) and Friends (an American sitcom); images of smoking commonly appear in each of these programmes [27]. Until relatively recently, much of young people's viewing would have been confined to the UK's five terrestrial channels (and to video and DVDs), although satellite and digital stations are now more ubiquitous in the UK. It would be interesting to be able to document whether the portrayal of smoking in UK soaps is more realistic and less glamourized than that presented within Hollywood.

Thirdly, it may be that Scottish smokers empathize less with Hollywood film stars, or that they seek to distance themselves from, or feel distanced from, American culture, even though the entertainment industry is increasingly globalized. However, all the top films in the UK from 1995 to 2004 (www.ukfilmcouncil.org.uk) were classed by the UK Film Council as originating, in part at least, from the United States, including eight films (three Harry Potter films, two Bridget Jones films, 'Die Another Day', 'The Full Monty' and 'Love Actually') where the country of origin was classified as

UK/USA and the three 'Lord of the Rings' films classified as USA/NZ.

Finally, there are a number of methodological factors which could account for the difference in findings. Given the age of our sample, we used current smoking as the outcome in the main analyses presented rather than smoking initiation, although we repeated our analyses comparing ever- with never smokers. One limitation of the smoking exposure data is that we do not know when, or indeed how many times, the respondents saw particular films, only whether they recalled seeing a film or not. This means that we are unable, with these data, to examine in detail issues of experimentation, establishment of regular smoking and quitting in relation to exposure to film incidences of smoking throughout adolescence. For our older (young adult) respondents, it could be that their exposure to films portraying smoking was longer ago and therefore less relevant to their current smoking behaviour or indeed that they saw some of the films after they had already started to smoke.

Secondly, we have no measure of how accurate young adults' recall of the films they had seen was. We did not conduct any test–retest reliability checks on their recall of film viewing. While we expect that young adults will recall any films that they have seen repeatedly (a common viewing pattern for young people) with a greater degree of accuracy, we do not know whether there is any differential effect between seeing smoking incidents in a film viewed only once (and therefore, perhaps, more liable to be inaccurately recalled) and in films viewed on several occasions (and consequently more accurately recalled).

Thirdly, in trying to replicate the methods of the previous US studies as closely as possible, we used the classifications of smoking occurrences in films which our American colleagues had already completed when we conducted our fieldwork in 2002–04. Unfortunately this meant that: (i) we did not include a film exposure measure at baseline which would have enabled us to examine the relationship longitudinally and (ii) at that time coding of the top box office films was only available up to and including 1999 (when our sample were aged 15), so it may be that portrayals of smoking in more contemporaneously released films would show a stronger relationship with current smoking in young adults. It is also likely that more of the 'missing' films (i.e. those released between 2000 and the time of interview) which the young people would have viewed in their late teens will have been classified as '15' or '18' in the UK or as R-rated films in the United States. Previous research has shown that parental restrictions on adolescents' viewing of R-rated films was associated with a decreased risk of smoking initiation, suggesting that exposure to these R-rated films is particularly influential on smoking behaviour [10].

Fourthly, although the study was successful in minimizing attrition during the years when respondents were still in school (ages 13 and 15), there were substantially more losses to the sample when the respondents were age 19. This is a common problem in longitudinal studies following people through childhood and adolescence into early adulthood. Although we conducted analyses using both unweighted data and data weighted to try to take account of differential attrition, and found similar results in both cases, it may be that we have not been able to fully address the limitations of losing a substantial proportion of the cohort by age 19.

Finally, it may be that at older ages, given greater sophistication in deciphering media messages, the measure of smoking exposure which has been shown to be associated with uptake of smoking in young adolescents is too 'blunt'. Future work should explore more subtle relationships, taking account of the gender of both the young person and film smokers and the ways in which specific smoking incidents are portrayed. Certainly, it has been argued that the cigarette is a 'classic ''floating signifier''' and that, as 'cigarettes can be used to signify a wide range of meanings, some of which might promote *negative* associations with smoking' [28], it cannot be assumed that all portrayals of smoking, whether positive or negative, appealing or repulsive, will necessarily induce smoking, particularly in more sophisticated audiences. Also, the impact of film exposure to smoking is mediated by the context in which it is viewed; for example,

showing anti-smoking advertisements immediately before screening a film depicting smoking appeared to nullify the effect of the smoking images seen [29].

Conclusions

In contrast to research on smoking initiation in younger adolescents in the United States, we found no association between a measure of the number of smoking incidents seen in films and current smoking in very young adults (age 19 years). Before concluding that media images are irrelevant for older adolescents or young adults in the UK, more work needs to be undertaken using both qualitative and quantitative methods to determine whether this discrepancy is the result of age differences, of various cultural differences between the UK and United States (including the prevalence of smoking) or methodological considerations. Whatever the result of these future investigations, we need to be mindful that the cultural acceptability of smoking consumption may change radically in Scotland in the coming years following the ban of smoking in public places in March 2006. This may result in young people becoming less tolerant of smoking altogether or it could result in screen images of smoking (because of their relative rarity or difference from 'naturalistic' patterns of smoking following the ban) becoming more potent because young people are less 'inoculated' by widespread observations of smoking in their daily lives.

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Conflict of interest statement

None declared.

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